

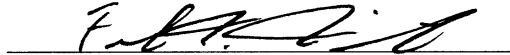
Title: Appendix A-G Quality Management Plan for Value Engineering

QMP 01-A-G Issue: 1 Revision: 1 Date: 22 Mar 2000 Proponent Office: CESPK-ED-C (100)

## Appendix A-G

# Quality Management Plan for Value Engineering

Authorized by: Frank W. Winton, Management Representative,  
Engineering Division (ED)



Author: A. J. Andrews

Approved by: Frank Y.F. Fong, Chief, Cost Engineering Branch



Changes to this document require the concurrence of the Management Representative and approval by the Chief, ED-C, and shall only be made following the procedures described herein.

Title: Appendix A-G Quality Management Plan for Value Engineering

QMP 01-A-G Issue: 1 Revision: 1 Date: 22 Mar 2000 Proponent Office: CESP-K-ED-C (100)

## TABLE OF CONTENTS

1.0 Purpose.

2.0 Scope.

3.0 References.

4.0 Definitions

5.0 Policy.

6.0 Quality Management

6.1 Responsibilities of District VEO

6.2 Responsibilities of District Elements

6.3 Requirements for Formal VE Studies

6.4 Fiscal Year VE Goal Distribution

6.5 Procedures for Processing Value Engineering Change Proposal (VECP)

6.6 VE Service Contracts

6.7 When To Do VE Studies and Procedures for Submitting Value Engineering Proposals (VEPs)

6.8 Procedures for Acknowledging Individuals for Submission of Approved Value Engineering Proposals

6.9 Philosophy of VE Studies

6.10 Value Engineering Handbook for CESP-K Employees

6.11 VECP Guide to Contractors

7.0 Records

Title: Appendix A-G Quality Management Plan for Value Engineering

QMP 01-A-G Issue: 1 Revision: 1 Date: 22 Mar 2000 Proponent Office: CESP-K-ED-C (100)

## 1.0 Purpose.

This Quality Management Plan (QMP) prescribes policies, objectives, responsibilities, procedures, and guidance in the overall operation of the Sacramento District's Value Engineering (VE) Program.

## 2.0 Scope.

This regulation is applicable to all elements of the Sacramento District.

## 3.0 References.

- a. AR 5-4, with USACE Supplement, Dept of the Army Productivity Improvement Program
- b. [AR 672-20 with USACE Supplement, Incentive Awards](#)
- c. [AR 5-17, Dept of the Army Ideas for Excellence Program](#)
- d. CESP R-11-1-3, Value Engineering Program
- e. OMB Circular No. A-131, Value Engineering
- f. [ER 1110-2-1150, Engineering and Design for Civil Works Projects](#)
- g. [ER 1110-1-12, Engineering and Design Quality Management](#)

## 4.0 Definitions

Value Engineering - An organized study of functions to satisfy the user's needs with a quality product at lowest life-cycle cost through applied creativity. It is also a discipline that applies teamwork and systematic analysis of function to remove unnecessary cost from products and practices.

Value Engineering Proposal (VEP) - A written, detailed proposal regarding any project or activity for which the Corps of Engineers has design, construction, operation, maintenance, procurement, or supply responsibility that was developed, using value engineering methodologies, by employees of the federal government or Architect/Engineers (A/Es) employed by the agency (and in conjunction with the local sponsor when appropriate).

Value Engineering Change Proposal (VECP) - A change to a construction, supply, or services contract initiated by the contractor. The proposal maintains or improves the essential functions or characteristics of the work being changed and results in a reduction of the contract price. A VECP requires a contract modification. The savings resulting from the change is shared between the contractor and the federal government as specified in the applicable Federal Acquisition Regulation (references 3.e and 3.f). The contract clauses apply to all construction and procurement contracts over \$100,000 and may be applied to lesser dollar contracts when the contracting officer determines there is a potential for cost reduction.

Value Engineering Study Team (VEST) - A group of individuals having a variety of backgrounds and skills organized to apply VE methodology to a project or situation.

Title: Appendix A-G Quality Management Plan for Value Engineering

QMP 01-A-G Issue: 1 Revision: 1 Date: 22 Mar 2000 Proponent Office: CESPK-ED-C (100)

## **5.0 Policy.**

VE shall be applied to all phases of planning, engineering and construction for civil works and military funded activities (including HTRW), and Supply and Service acquisitions. All employees within the Sacramento District are encouraged to develop and submit Value Engineering Proposals (VEPs), and where applicable will assist construction contractors in their efforts to utilize the Value Engineering Incentive Clauses of their contracts. VEPs will be reviewed for environmental requirements.

The District Commander is responsible for the VE program. The Value Engineering Officer (VEO), a Special Assistant to the Commander, will be assigned to direct the VE program in accordance with this Quality Management Plan. VE Policy Committee is established to formulate policy, monitor progress, and resolve problems concerning the VE program. Membership will consist of the Chairperson (Deputy District Commander) and Committee members (Special Assistant to Chief Engineering Division, Assistant Chief of Construction Operations Division and the VEO).

## **6.0 Quality Management.**

### **6.1 Responsibilities of District VEO**

- a. Monitor all VE efforts and report VE progress to the VE Policy Committee, Commander and to higher headquarters.
- b. Develop and sustain an active and productive VE program within the framework of existing applicable regulations and promote active employee participation by encouraging serving on VE Study Teams and submitting individual value engineering proposals.
- c. Maintain a training program as required to assure that appropriate Government and Contractor personnel are familiar with the principles and application of VE.
- d. Use the Value Engineering Policy Committee to establish policies, resolve major problems, and to monitor the progress of the VE program.
- e. Initiate funding requests and manage funds for Value Engineering program.
- f. Perform formal VE studies using in-house personnel whenever possible
- g. Process and monitor all individual VEPs and contractor VECPs.
- h. Screen VE proposals and provide those affecting natural resources to the Planning Division/Environmental Resources Branch for environmental review.
- i. Utilize OCE VE Study Team (OVEST) when practical.
- j. Establish requirements for, and administer, open-end AE contracts to be used to perform formal VE studies when either the use of in-house personnel or OVEST is not practical.
- k. Promote active contractor participation and monitor the processing of construction contractor submitted Value Engineering Change Proposals (VECP) to insure verbal notice of decision within fourteen days from the time the contractor submitted his proposal to the Resident/Area Office.

Title: Appendix A-G Quality Management Plan for Value Engineering

QMP 01-A-G Issue: 1 Revision: 1 Date: 22 Mar 2000 Proponent Office: CESPCK-ED-C (100)

- l. Prepare District office memorandums, guides, and promotional publications pertaining to VE activities, e.g., prepare VE letters to construction contractors for CESPCK-CO's signature immediately upon contract award.
- m. Monitor that VE is delineated during pre-construction conferences.
- n. Insure CESPCK auditor audits all approved VE proposals with savings in excess of \$1,000,000.
- o. Insure validation of all approved savings upon construction award and forward completed ENG Form 4607-R (Value/Management Improvement Action) to higher headquarters.
- p. Be responsible for District's VE training program to meet the goals established by HQUSACE. Develop and coordinate the VE training program with the CESPCK Training and Development Branch. Maintain current attendance data of all CESPCK personnel that have attended a 40-hour VE workshop.
- q. Request all appropriate employees to attend a 40-hour VE workshop within three (3) years of hiring.
- r. Request all appropriate employees to attend VE Refresher Courses when made available.
- s. Provide an orientation program (one-week duration, maximum) for Engineer and Scientist Interns.
- t. Assist supervisors of VE proposers in preparation of monetary awards when requested.
- u. Compute fiscal year VE goals and recommend adjustment of VE goals, if necessary, when appropriate.
- v. Work closely with the local Pony Express Chapter of the Society of American Value Engineers in promoting Value Engineering.

## **6.2 Responsibilities of District Elements**

### Program and Project Management Division shall:

- a. Per OMB Circular A-131, ensure that sufficient project design funds are provided for conducting VE studies on all projects (Civil, Military or Work for Others) with programmed amount or current working estimate exceeding \$2,000,000. Funding will be budgeted/requested and VE studies scheduled in the Project Management Plans (PMPs), and Project Executive Summaries (PES) as Major Milestones. Funds should be budgeted/requested so that they will be available for a VE study after completion of the Feasibility Report, Concept Design or other documented depending on the program, and will be coordinated with the VEO.
- b. Insure that personnel attend VE training.
- c. Send all career interns to Value Engineering Office for orientation.

### Engineering Division shall:

- a. Be responsible for technical review and approval or disapproval of all VEPs. Insure incorporation of approved VEPs into projects prior to bid opening. Specifically, the Biddability, Constructibility, Operability, and Environmental (BCOE) document should address that approved VE actions have been implemented.
- b. Be responsible for technical review and approval or disapproval of all VECs.

Title: Appendix A-G Quality Management Plan for Value Engineering

QMP 01-A-G Issue: 1 Revision: 1 Date: 22 Mar 2000 Proponent Office: CESP-K-ED-C (100)

c. Provide manpower and technical assistance for in-house VE study teams. In-house study teams composition shall normally consist of five disciplines, as a minimum plus an estimator. However, team composition will vary with the kind of project to be studied. If possible, team members should be selected from those who have attended a 40-hour VE workshop.

d. Ensure that personnel attend VE training ,

e. e. Send all career interns to Value Engineering Office for orientation.

Construction-Operations Division shall:

a. Ensure that all prime contractors receive VE orientation.

b. Ensure that all Contractor VE proposals are processed in a timely manner, coordinating with VEO.

c. Provide manpower and technical assistance to VE Study teams.

d. Ensure that personnel attend VE training.

e. Send all career interns to Value Engineering Office for orientation.

Planning Division shall:

a. Review VE proposals and identify any conflicts with environmental requirements, and if necessary, recommend that VE proposal be disapproved.

b. Provide manpower and technical assistance to VE Study teams.

c. Ensure that personnel attend VE training courses.

d. Send all career interns to Value Engineering Office for orientation.

All Other District Elements:

a. All employees are encouraged to become aware of and participate in the VE program and assume an enterprising attitude during any participation that they may have in the program.

b. All employees are encouraged to participate in the VE training.

### **6.3 Requirements for Formal VE Studies**

Public Law requires a VE study to be performed on all Civil Works projects with CWE of \$10,000,000 and greater. Based upon HQUSACE guidance and OMB Circular A-131 dated 21 May 1993, a formal VE study shall be performed on all construction projects with a program amount or current working estimate (CWE) of \$2,000,000 and greater and on supply, service, and operation and maintenance projects with CWE exceeding \$1,000,000. South Pacific Division Commander must approve exceptions to this requirement. SPK must forward to Division VEO a request for waiver based upon rationale provided by Programs and Project Management Division or Engineering Division.

Title: Appendix A-G Quality Management Plan for Value Engineering

QMP 01-A-G Issue: 1 Revision: 1 Date: 22 Mar 2000 Proponent Office: CESPCK-ED-C (100)

#### 6.4 Fiscal Year VE Goal Distribution

a. The VEO is responsible for assuring that the District VE goal is based on recognized workload and has been coordinated with Engineering and Construction Divisions. The goals may be adjusted with CESPDP VEO during the third quarter of the fiscal year. The VE goals are computed using the following guidelines as dictated by HQUSACE-VEO.

<u>TYPES OF GOALS</u>	<u>QUALIFIERS</u>	<u>GOALS</u>
Military	Construction award (MCA only)	6%
Civil	Construction obligation per FY based on construction placement plus O&M	6%
O&M	Based on contractible amount.	0.8%
VE Studies	All Civil Works projects and all Army projects (regardless of funding type) with construction cost of \$2 million and greater and for all O&M, Supply, and Service expenditures with cost of \$1 million and greater.	Varies each year
Forty-hour Workshop	Technical staff, GS-5 and above within three years of hiring.	xxx Training

xxx A minimum of 15% of all eligible, untrained personnel should attend the forty-hour workshop annually.

#### b. MONETARY GOAL CALCULATIONS

MILITARY GOAL: CESPDP is charged with saving 6% of the Division's MCA Construction (Army only) Program each fiscal year. CESPCK designs 100% of the total MCA Program and through the 1980s has constructed an estimated 80% with CESPL constructing the remaining 20% since CESPL does only Civil Work. The construction workload has shifted in the 1990s to where CESPL is constructing a bigger percentage therefore the 80/20 split may be revised. CESPL is responsible for VEPs and VECs during construction therefore the Division MCA goal is divided into the 80/20 split. The MCA programmed amount is reduced by the cost of Supervision, Inspection, and Overhead (estimated at 10.5%) before multiplying by six percent to determine the dollar goal.

$$\text{MILITARY GOAL} = [\text{CESPK} + (\text{CESPL} \times .80)] \times .895 \times .06 = \text{goal}$$

Anticipated awards in CESPCK plus 80 percent of CESPL awards

$$\text{CIVIL WORKS GOAL} = [\text{Civil Work anticipated placement} \times .895] \times .06 + [\text{O \& M} \times .895] \times .008 = \text{goal}$$

Anticipated placement and O&M is reduced by the cost of Supervision Inspection, and Overhead (estimated at 10.5%)

Note: Due to anticipated re-distribution of workload within CESPDP the above formulas will be revised when appropriate.

## 6.5 Procedures for Processing Value Engineering Change Proposal (VECP)

a. Construction-Operations Division will emphasize and encourage use of the General Provisions, VE Incentive Clause, and will supply the contractors with all VECP related information.

b. Field offices will specifically discuss the "VE Incentive" clause in preconstruction conferences and will encourage its use.

c. VECPs shall be processed in accordance with Construction Operations Division Memo, subject: VECP Transmittals dated 7 April 1989. It is recommended that the VEO receive from the Area/Resident Office a copy of the VECP forms initially in order to expedite the review process by Engineering Division and to insure attainment of the District goal of giving the proposer a verbal decision within 14 calendar days.

d. VEO will prepare a memorandum requesting Engineering Division to review the VECP.

e. Engineering Division will evaluate all VECPs and recommend action to VEO by 1st Endorsement.

f. VEO, by 2nd Endorsement, will request Construction-Operations Division to either incorporate the VECP by a construction change order or to advise the contractor that the VECP has been disapproved. Construction-Operations Division or the Resident Engineer will then prepare a reply to the contractor for the Contracting Officer's signature based on Engineering Division's recommendation. Construction-Operations Division will also review the amount offered for accepted proposals and negotiate with the contractor where necessary to obtain a fair settlement.

g. It must be emphasized that time is of the essence in review and approval of VECPs. If the contractor is delayed by untimely handling of VECPs it may reduce or eliminate any potential savings. A Notice to Proceed (NTP) prior to complete negotiation may be issued, but agreement on minimum savings to be realized must be consummated between the government and the contractor prior to issuing the NTP. Contract time of performance will not normally be extended for incorporation of VECPs.

## 6.6 VE Service Contracts

The following selection criteria will be used in procuring an A-E for formal VE studies within the Sacramento District.

### SELECTION

<u>Evaluation Factor</u>	<u>Weight ( % )</u>
1. Required disciplines as a licensed P.E. or architect. A Society of American Value Engineers (SAVE) Certified Value Specialist (CVS) who may be a member of the firm or a consultant shall lead studies.	20
2. Key personnel in civil, structural, architectural, mechanical, electrical, and cost estimating disciplines who have been trained in 40-hour VE workshops approved by SAVE and must have performed at least one formal VE study for a client.	20
3. VE program experience (DOD related)	15



Title: Appendix A-G Quality Management Plan for Value Engineering

QMP 01-A-G Issue: 1 Revision: 1 Date: 22 Mar 2000 Proponent Office: CESP-K-ED-C (100)

4.	In-house staff capacity to perform the work	10
5.	Knowledge of USACE VE procedures, criteria,	10
6.	Experience with USACE planning, design and construction contracts	10
7.	Ability to produce clear, concise, reports (past successes, technical papers SAVE, SAVE national and local participation, offices held).	5
8.	Location (proximity to the District)	5
9.	Existing DOD contracts	5
Total		100 %

#### 6.7 When To Do VE Studies and Procedures for Submitting Value Engineering Proposals (VEPs)

1. The VE effort is best applied as early in the life of the project as possible in order to minimize the cost of redesign and attain the maximum savings. It must be remembered that VE proposals made close to or after final design are rarely cost effective after considering cost of redesign, slippage in award dates, beneficial occupancy of user, and possible loss of construction season. However, VE effort is acceptable at any time as defined below.

a. Army Projects: VE study may begin upon:

- (1) Receipt of the DD Form 1391 and or design criteria from the using service.
- (2) Receipt of concept, preliminary, or final design documents for review.

b. Civil works projects: VE study may begin:

(1) On projects under the Life Cycle Project Management System, a VE study shall be performed on the earliest document available that satisfied the functional requirements of the project and includes a comprehensive (M-CACES) cost estimate.

(2) On projects where an approved GDM exists, this should be the basis for the VE study. Eventually this condition should not exist.

(3) If a future project requires a GDM (or similar concept document) and final design is proceeding concurrently with the GDM review, the VE study may be started prior to its approval.

(4) Standard criteria and designs normally incorporated into the project may be studied prior to the receipt of the approved GDM or similar document.

c. All District design elements shall critically examine their design criteria as it exists in an approved design, as defined above, and before proceeding, shall consider using VE methodology to improve those criteria.

Title: Appendix A-G Quality Management Plan for Value Engineering

QMP 01-A-G Issue: 1 Revision: 1 Date: 22 Mar 2000 Proponent Office: CESPCK-ED-C (100)

2. Value Engineering Proposals: Proposals shall be prepared on SPD Form 183-R, available from the VE office. The VEP form (Figure A-1) shall be supplemented as necessary with estimating and/or other documentation, and with SPK FORM 358 (Life Cycle Cost Analysis - Figure A-2), when applicable.

3. Procedure for In-house Team Studies Not Initiated by the Value Engineering Officer

d. Individual offices within the District, including field offices, are encouraged to conduct their own VE studies in instances where they feel they can improve an existing design or construction process. In such cases, the office involved shall notify the VEO of the undertaking. Team proposals that are approved and implemented are eligible for awards.

e. Requirements for the preparation, submittal, and approval of the report are the same as described in paragraph G-2 above.

4. Procedure for Independent Studies

a. All employees of the Sacramento District are encouraged to participate in the VE Program on an individual basis. Proposals should be coordinated with the VEO before formal submittal and shall be routed for approval in the same manner as team studies. Individual proposals that are approved and implemented are eligible for awards.

b. Requirements for the preparation, submittal, and approval of the report are the same as described in paragraph G-2 above.

**6.8 Procedures for Acknowledging Individuals for Submission of Approved Value Engineering Proposals**

c. All CESPCK employees are eligible for VE awards in accordance with [AR 5-17. Ideas for Excellence Program](#) and [AR 672-20 Incentive Awards Program](#). The Value Engineering Office will use the above Army Regulations in conformance with CESPCK-DE-V Memo, subject: Policy Letter, Procedures for Acknowledging Individuals for Submission of Approved Value Engineering Proposals, dated 13 May 1993.

d. The proposer's supervisor shall determine eligibility for a monetary award.

e. The actual savings, resulting from approved and implemented VE proposals, does not occur until the project is awarded for construction or, if the project is already under construction, until a modification to the contract is signed which addresses the change. However, to provide timely employee recognition for VE actions the award nominations will commence upon receipt of (1) notice that the VEP change has been implemented into the design or (2) if the project is in the construction phase, upon receipt of the signed construction change order by the VE office.

f. Upon receipt of notification that Engineering Division will implement VEP changes or receipt of a VEP construction change order, VEO will notify and assist the proposer's supervisor in initiating the forms in accordance with CESPCK-DE-V Memo referred to in paragraph (a) above. Completed and signed forms will be routed through the supervisor's division chief and sent to either the CESPCK Incentive Awards Administrator or to the AIEP secretary for processing. The VEO will be notified as to when the VE proposer will be presented his or her award by the District Commander at an Awards Ceremony.

## 6.9 Philosophy of VE Studies

VE studies require team members, their supervisors, and those responsible for the original design to remember that the effort, while usually well worth the trouble, is always difficult. In particular:

a. The difficulty of serving on a team is recognized. Also, the need for consultation with others and the need for clerical help means that each VE effort will affect more than just those directly involved with the study. Each supervisor will give the program full support and, where conflicts with normal workload occur, will arrange a reasonable solution. The VE studies may cause short delays. However, it must be remembered that the VE Program is an integral part of the District's mission, and is a responsibility of each technical element.

b. It is to be expected that many studies will result in recommendations requiring waivers of criteria. The tendency to reject proposals on the basis of criteria violations must be overruled by a desire to achieve the best end product. An effort should always be made to obtain waivers when engineering judgment indicates that criteria serve only to restrict better design.

c. Knowledge of restrictive criteria should neither prevent VE studies nor is it in itself reason for rejecting proposals. It is one of the purposes of the VE Program to discover and correct unsuitable criteria.

d. There is erroneous inclination to consider VE as an infringement on the designer's responsibility and, therefore, a duplication of effort or a reflection on one's capability. In reality, VE is an effort to find and resolve some of the high-cost areas that always arise and often are bypassed in the complex problems and works under rigid criteria and time schedules. VE differs from normal design practice in that:

(1) It is a second look that is accomplished after a design indicates a potential for cost reduction.

(2) It is not subject to the normal design restriction of budget, time, and criteria.

(3) It employs handpicked team members with special qualities who concentrate their collective effort through analysis of the function on solving a particular problem. Thus, VE complements rather than duplicates.

## 6.10 Value Engineering Handbook for CESP-K Employees

(Separate Handbook available from Value Engineering Office)

## 6.11 VEC-P Guide to Contractors

(Separate Handbook available from Value Engineering Office)

## 7.0 Records

Records of VE studies, VEC-Ps, and reports of savings will be maintained in the VE office for verification that the VE proposals and/or the VEC-Ps have been incorporated into the plans and specifications and the contract has been awarded or the modification to the contract has been received.